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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,446

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EXAMINER

WEBB, VERNON P

ART UNIT

PAPER NUMBER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,446	Applicant(s) KINOSHITA ET AL.	
	Examiner VERNON P. WEBB	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-18, 20 and 22-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-18, 20, 24 and 25 is/are rejected.
- 7) ☒ Claim(s) 22 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>02/14/2011</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Application

1. This office action is in response to the filing of the amendment on 06/02/2010, Claims 15-18, 20 and 22-25 are pending in this application.

Response to Arguments

2. Applicant's arguments with respect to claims 1-9, 11, 12, 14, 19 and 21 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

3. Claims 22 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. Claims 15-18 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koike et al. (U.S. Pub. Application 2003/0022028 A1) and in further in view of D'Evelyn et al. (U.S. Pub. Application 2005/0087753 A1).
1. Regarding claim 15, Koike et al. discloses a light-emitting diode comprising:
- a substrate (item 101) made of group III-V nitride semiconductor (pg. 2, paragraph [0023]; pg. 4, paragraph [0058]; Fig. 1)
 - a first n-type semiconductor layer (first n-GaN layer of 104 formed on the first n-AlGaN layer of 104) containing indium and formed over a main surface of the substrate (item 101) (pg. 2, paragraph [0023]; Fig. 1)
 - a light-emitting layer (item 105) formed over the first n-type semiconductor layer (first n-GaN layer of 104 formed on the first n-AlGaN layer of 104) (pg. 2, paragraph [0024]; Fig. 1).
 - a second n-type semiconductor layer (item 103) formed between the substrate (item 101) and the first n-type semiconductor layer (first n-GaN layer of 104 formed on the first n-AlGaN layer of 104) (pg. 2, paragraph [0023]; Fig. 1);
 - a third n-type semiconductor layer (second n-GaN layer of 104) formed between the first n-type semiconductor layer (first n-GaN layer of 104 formed on the first n-AlGaN layer of 104) and the light-emitting layer (item 105) (pg. 2, paragraph [0023]; Fig. 1).

- a fourth n-type semiconductor layer (third AlGa_N of 104) formed between the first n-type semiconductor layer (first n-GaInN layer of 104 formed on the first n-AlGa_N layer of 104) and the light-emitting layer (item 105), the fourth n-type of semiconductor layer (third AlGa_N of 104) formed directly on the third n-type of semiconductor layer (second n-GaInN layer of 104) (pg. 2, paragraph [0023]; Fig. 1).
2. Regarding claim 16, Koike et al. discloses a diode as described in reference to claim 15, wherein the fourth n-type semiconductor layer (third AlGa_N of 104) is made of a compound whose general formula is represented by Al_eGa_{1-e}N (0≤e<1) (pg. 2, paragraph [0023]; Fig. 1).
 3. Regarding claim 17, Koike et al. discloses a diode as described in reference to claim 15, wherein the fourth n-type semiconductor layer (third AlGa_N of 104) is a cladding layer (pg. 2, paragraph [0023]; Fig. 1).
 4. Regarding claim 18, Koike et al. discloses a diode as described in reference to claim 15, wherein the cladding layer (third AlGa_N of 104) has a thickness of 5 to 200 nm inclusive (pg. 2, paragraph [0023]; Fig. 1).
 5. Regarding claim 24, Koike et al. discloses a diode as described in reference to claim 15, wherein the first n-type layer is a monolayer (first n-GaInN layer of 104 formed on the first n-AlGa_N layer of 104) (pg. 2, paragraph [0023]; Fig. 1).
 6. Claims 20 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koike et al. (U.S. Pub. Application 2003/0022028 A1) and in further in view of and Sakano et al. (U.S. Pub. Application 2003/0080341 A1).

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7. Regarding claim 20, Koike et al. discloses an illuminating device comprising multiple light-emitting diodes, wherein the diodes including:

- a substrate (item 101) made of group III-V nitride semiconductor (pg. 2, paragraph [0023]; pg. 4, paragraph [0058]; Fig. 1)
- a first n-type semiconductor layer (first n-GaN layer of 104 formed on the first n-AlGaN layer of 104) containing indium and formed over a main surface of the substrate (item 101) (pg. 2, paragraph [0023]; Fig. 1)
- a light-emitting layer (item 105) formed over the first n-type semiconductor layer (first n-GaN layer of 104 formed on the first n-AlGaN layer of 104) (pg. 2, paragraph [0024]; Fig. 1).
- a second n-type semiconductor layer (item 103) formed between the substrate (item 101) and the first n-type semiconductor layer (first n-GaN layer of 104 formed on the first n-AlGaN layer of 104) (pg. 2, paragraph [0023]; Fig. 1);
- a third n-type semiconductor layer (second n-GaN layer of 104) formed between the first n-type semiconductor layer (first n-GaN layer of 104 formed on the first n-AlGaN layer of 104) and the light-emitting layer (item 105) (pg. 2, paragraph [0023]; Fig. 1).
- a fourth n-type semiconductor layer (third AlGaN of 104) formed between the first n-type semiconductor layer (first n-GaN layer of 104 formed on the first n-AlGaN layer of 104) and the light-emitting layer (item 105), the fourth n-type of semiconductor layer (third AlGaN of 104) formed directly on the third n-type of semiconductor layer (second n-GaN layer of 104) (pg. 2, paragraph [0023]; Fig. 1).

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8. Koike et al. does not disclose an illuminating device comprising multiple light-emitting diodes.

9. However Sakano et al. discloses an illuminating device comprising multiple light-emitting diodes (pg. 12, paragraph [0172]; Fig. 5).

10. It would have been obvious for one of ordinary skill in the art to form a light-emitting diode as disclosed by Koike et al. to be capable of being an illuminating device comprising multiple light-emitting diodes as disclosed by Sakano et al. as its well known in the art to form duplicates or variations of light emitting diodes are widely used as the light source for illuminating switch, full-color display, back light for liquid crystal display and the like (pg. 1, paragraph [0006]).

11. Regarding claim 25, Koike et al. discloses a diode as described in reference to claim 20, wherein the first n-type layer is a monolayer (first n-GaN layer of 104 formed on the first n-AlGaN layer of 104) (pg. 2, paragraph [0023]; Fig. 1).

Conclusion

12. Applicant's amendment filed on 12/20/2010 necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VERNON P. WEBB whose telephone number is (571)270-3332. The examiner can normally be reached on Monday through Friday, 7:30 am to 5 pm, Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne A. Gurley can be reached on 571-272-1670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/V. Parris Webb/
Examiner, Art Unit 2811

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/Hung Vu/
Primary Examiner, Art Unit 2811